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# British Columbia Ministry of Forests

# General Data Collection System

# Version 6.0

# FRDA 136

## ** User's Guide **

Programming and Documentation by:

Wendy M. Herring
Computer Systems Consultant
Box 182
Prince George, B.C.
V2N 2H8

May 31, 1989

Revised: June 19, 1989

Research Branch

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# Addenda to GDC 6.0 User's Guide

10 July 1989

Several facts have come to light since the publication of this manual:

1 - **Searching by Identifiers**

While in the design phase, we thought the ability to locate records by key information would be a very useful feature. Several of our users agreed. GDC 6.0 was supplied with a facility for searching for data matching user-supplied strings.

Unfortunately, due to constraints imposed by the computing power of the Husky Hunter, the response or average waiting time of this operation is not very good. This is especially noticeable on sets of data larger than a few hundred records.

Please accept our apologies for any inconvenience this may cause. We fully intend to assess the viability of improving the operation of this function.

2 - **Numeric Min/Max**

This function allows the user to enter minimum and maximum allowable limits for the entry of numeric variables. Once set, these high/low boundaries will cause the Husky to beep and flash an error message if the operator enters a value outside the allowable range.

Unfortunately, there appears to be a bug in this facility. We are working to correct it.

# 1 INTRODUCTION

## 1.1 System Summary/ Objective

The General Data Collection System (GDC) inputs and stores field data in the Husky Hunter, or on an IBM/ PC compatible microcomputer. Data collected on the Hunter may be transferred to a microcomputer for storage, editing or further processing. The system has been designed as a useful, flexible tool for collecting data in a wide range of user-defined formats.

## 1.2 The Software Files

Two versions of the software exist: one for the Hunter, and one for PC DOS machines. These programs permit two types of data collection:

1. BASIC - define the data format and start measuring.

2. DOWNLOAD FILE - load the Hunter with a file containing previous measurements and identifiers. Collect new measurements with the assistance of display and comparison to the previous data.

The programs work in conjunction with a message file named "GDCERR.MSG". This file must be loaded along with the GDC program to form a complete system.

## 1.3 Functional Overview

The first function selected must be definition of a measurement format. This can be done by either transferring an existing file from the microcomputer to the Hunter (or vice versa), by creating or modifying an existing file under a text editor (PC), or by defining a new format via keyboard entries under GDC control.

Once a format has been defined, new measurements may be entered, remarks may be added, and data may be edited or reviewed. When measurements are complete, another format may be selected, or the current format may be uploaded to the host computer.

After updated measurements have been transferred to the host, they can be reviewed, edited, printed or analysed.

## 1.4 Schematic Overview

| HUNTER/ PC | HUNTER only |
|---|---|
| Define Format | *Download Format and Data from PC |
| Add/Change Remarks | |
| Enter Data | |
| Modify Data | |
| Review Data | |
| | *Send Data to PC |

* Note: File Transfers are external to GDC; perform these operations under DEMOS control (Hunter).

## 1.5 Using the System

A major design goal has been to make functioning of the system intuitive. However, many of the finer points, such as the letter codes for all possible data types, can only be gained by reading the manual. The data entry portion of the system uses a spreadsheet format, and uses the cursor control keys in a manner similar to many popular spreadsheet programs. There are some differences, however, because of the automatic duplicate and increment features of the system. Refer to the appropriate sections of this document when you need more information.

To start using the system, just absorb these points, then turn the machine on and play. When you feel familiar with the basic system or have specific questions, return to the manual for assistance:

a. Hunter: always exit GDC by pressing BRK from the main menu, so that no information is lost;

b. Hunter: the default password is GDC;

c. Before collecting data you must define a measurement format describing the layout and contents of your data records. Respond to the questions presented for each data field.

d. To back up in the menus or cancel a function, press the Break key (BRK on Hunter; ESC on PC).

e. To back up within a field, deleting characters as you go, use the Delete key. The Backspace and left arrow keys **cannot** be used for this purpose. (The Backspace has been disabled, because it returns the same internal code as the left arrow (<-); the left arrow cannot be used to back up within a field, because it has been assigned the special function of backing up a field on the spreadsheet.)

# 2 SOFTWARE FUNCTIONS

## 2.1 System Startup Screens

### 2.1.1 Execution Mode Warning - Hunter only

When GDC is started from DEMOS (on the Hunter), the screen warns:

```
WARNING: For proper execution and data
security, GDC must be started from
DEMOS by this command:
        CONT GDC
If this was not done, exit to
DEMOS and start GDC again.
```

If GDC is not started by a "cont gdc" statement, software control will be lost when the PWR key is pressed to temporarily turn off the machine. This could corrupt the current measurement file. ALWAYS start GDC on the Hunter in continuous execution mode.

### 2.1.2 Title Screen

The title screen contains the version level and release date for the software. Press any key to move to the main menu.

```
89/05/15     ** G D C **     Version 6.00

          MINISTRY OF FORESTS
           Research Branch

        General Data Collector
```

### 2.1.3 Main Menu

The main menu (M1) displays the basic functions available in GDC:

```
   1 - DATA ENTRY
   2 - MEASUREMENT FORMAT
   3 - SYSTEM CONTROL/ CLEAR
   4 - AVAILABLE DISK SPACE
   Press ESC to exit GDC

 Enter function number: _              M1
```

(Available Disk Space is only defined for the Hunter version.)

### 2.1.4 Menu Overview

M1: Main Menu
1 - DATA ENTRY
2 - MEASUREMENT FORMAT
3 - SYSTEM CONTROL/ CLEAR
4 - AVAILABLE DISK SPACE
M4: Data Entry
1 - ENTER/ MODIFY Data
2 - REVIEW Data
3 - SET Display Options
M2: System Control/ Clear
1 - ERASE DISK FILE
2 - CLEAR DATA/ KEEP FORMAT
3 - COUNT DATA RECORDS
4 - SET COMMUNICATIONS PARAMS
M6: Access Method
1 - One Identifier
2 - Two Identifiers
3 - Three Identifiers
4 - Record Number
M7: Display Options
1 - NUMERIC MIN/MAX
M3: Measurement Format
1 - ENTER NEW Measurement Format
2 - MODIFY Measurement Format
3 - REVIEW Measurement Format
4 - Add/Change/Review REMARKS
M5: Add/Change/Review Remarks
1 - ADD Remark
2 - CHANGE Remark
3 - REVIEW Remark

## 2.2 Data Entry

To create or access measurement data, select "Data Entry" from the main menu, and respond to the prompt for the measurement file name. The Data Entry menu (M4) will display:

```
1 - ENTER/ MODIFY Data
2 - REVIEW Data
3 - SET Display Options

Enter function number: _              M4
```

Note: After the measurement file name is entered, the requested measurement format will be automatically loaded. If any errors are detected during the load the user will be advised. The errors must be corrected before data can be entered or accessed.

### 2.2.1 Enter/ Modify Data

If some data records have already been entered for the selected measurement, the Access Method menu (M6) will request the access method for locating the starting record:

```
  ACCESS METHOD
 1 - One Identifier
 2 - Two Identifiers
 3 - Three Identifiers
 4 - Record Number

Enter function number: _                M6
```

All measurement files may be accessed by record number. Measurement files containing identifier fields may be accessed by identifier(s).

If record number access is requested, the next screen will be:

```
ADD/EDIT: by RECORD #

Record #:        _____
Last record in file:  m
Last updated record:  n
```

Enter a record number within the range of the file to start editing at that record, or request the record number immediately following the last record number in the file to add new records. Adding and editing are performed by a single menu option: existing records are edited, record numbers beyond the current total record count are added.

If you want to view the last "n" records in the current file then add new records, request record number [last-n], and move the cursor down "n" records (past [last-n], [last-n-1], etc.) to start keying new values at record number [last+1].

If identifier access is requested, the next screen will be:

```
ADD/EDIT: by IDENTIFIERS

prompt#1:
prompt#2:
prompt#3:

Last record in file:  id#1  id#2  id#3
```

where:

| | |
|---|---|
| prompt#n | is the column header for the selected identifier fields |
| id#n | is the value of the identifier field for the last record in the current file |

Enter pertinent identifier values.

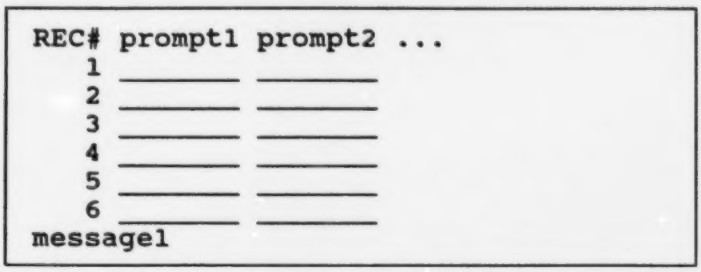
e.g. If tree species (SP) and damage code (D) are the first and second identifiers, respectively, the first record containing a Hemlock with damage code 4 would be sought by the following screen:

```
ADD/EDIT: by IDENTIFIERS

SP       : HW
D        : 4

Last record in file:  HW 9
```

After the record number or identifiers have been entered, the first matching record will be located and a spreadsheet data screen will display. On the Hunter there will be a line of column headers followed by 6 data lines and a message line. The PC screen will display 22 data lines.




The column headers and the underscores will be truncated to the defined length for each field.

Key a value followed by a cursor arrow to enter data, or use the cursor arrows or "goto" keys alone to move around the spreadsheet. To terminate data entry or editing, press the Exit key. The spreadsheet is as large as your file - whenever you move the cursor beyond the bounds of the current "active" portion of the file that part of the file will be automatically updated and a new portion will be read. During these times the screen may slow temporarily. It is a good idea to perform edits in a sequential manner, whenever possible, to minimize the number of file accesses.

The Cursor keys, Goto keys and Exit key are:

Cursor Keys:

| | |
|---|---|
| up arrow (↑): | move up one record |
| down arrow (↓): | move down one record |
| left arrow (<-): | move back one data field |
| right arrow (->): | move ahead one data field |

If a cursor arrow is pressed in the first position of a field the current value will be unchanged, except in the case of automatic duplicate or increment fields where the duplicated or incremented value will be carried forward.

If a cursor arrow is pressed after a value has been keyed, the new value will be accepted before the cursor is moved.

GoTo Keys: valid in 1st position of field

Go To Record # (>): jump to specified record

GO To Column Key: jump to specified column
Hunter: hold shift key, press # key
PC: press Fn key;
ie. F2 jumps to column 2

When a "goto" key is pressed the cursor moves to the specified column or record without duplicating or incrementing values unless the "goto" record immediately follows the current record.

Exit Key: save records; exit data entry

Hunter: BRK key

PC: ESC key

Example:

| REC# | SPECIES | HEIGHT | DBH | ... |
|---|---|---|---|---|
| 1 | PINUCON | 43 | 17 | |
| 2 | _____ | _____ | ____ | |
| 3 | _____ | _____ | ____ | |
| 4 | _____ | _____ | ____ | |
| 5 | _____ | _____ | ____ | |
| 6 | _____ | _____ | ____ | |

HT IN CM; DBH IN MM

### 2.2.2 Review Data

The Access Method menu (M6) will request the access method for locating the first record to be viewed, then either the record number or identifiers will be requested, as in the Enter/Modify Data option.

The first matching record will be located and a spreadsheet data screen will display. On the Hunter there will be a line for column headers followed by 6 data lines and a message line. On the PC, the display will contain 22 data lines.

```
REC# prompt1 prompt2 ...
   1 xxxxxxx xxxxxxx
   2    ...
   3    ...
   4    ...
   5    ...
   6    ...
BRK/ESC: exit
```

View the records as long as desired, then press the Exit key to halt the review process and return to the Data Entry menu, or press any other key to enter the record number or identifiers for another record to be viewed.

In a single review session the records are accessed sequentially. To start back at the beginning of the file, break to the Data Entry menu, then select the Review option again.

### 2.2.3 Comments

In this version of GDC you must define an explicit comment field as a portion of your data record in order to enter comments. Then, enter comments during data entry as you would enter any other data field.

e.g.

```
REC# SP HT DBH  COMMENT
   1 PX 43  17 NO LEADER
   2 PL 65  19 GOOD
   3 __ __ ___ __________
   4 __ __ ___ __________
   5 __ __ ___ __________
   6 __ __ ___ __________
```

### 2.2.4 Set Display Options

To set limits on numeric entries choose "Numeric Min/Max" from the Display Options menu (M7):

```
DISPLAY OPTIONS     File name: xxxxxxxx

1 - NUMERIC MIN/ MAX
Press ESC to exit

Enter function number: _              M7
```

Minimum and maximum limits may be set on numeric fields to trap data entry errors. The limits will only be valid for the current file, for the current session. If you are flipping between files, you will have to reset the min/max values each time you change data files.

After min/max values have been set for a given field, invalid data values will be signaled with an error message and the value will have to be entered again. An entry outside the limits will be accepted on reentry. The default limits are 0 (zero) for the minimum and a string of 9's equal to the length of the field for the maximum.

On the first Numeric Min/Max screen, enter the number of a numeric field for which the min/max values are to be changed:

```
1:prompt1    2:prompt2    3:prompt3
...


Field number for change: _
```

Enter the field number for a numeric field. The next screen will display the current minimum and maximum values at the right side of the screen, and prompt for new values:

```
Field # x

New minimum: _          [0]

New maximum:            [99999]
```

Key and enter the new values. They will be retained for the balance of the current session with the current file.

### 2.3 System Control/ Clear Functions

To access the System Control and Clear functions, choose "System Control/ Clear" from the main menu. The System Control/ Clear menu (M2) will display:

```
1 - ERASE DISK FILE
2 - CLEAR DATA/ KEEP FORMAT
3 - COUNT DATA RECORDS
4 - SET COMMUNICATIONS PARAMS

Enter function number: _          M2
```

(Set Communications Params is only defined for the Hunter.)

### 2.3.1 Erase Disk FIle

All GDC data sets are stored as disk files with the extension ".GDC". To determine which GDC files currently exist, exit to the operating system (DEMOS on the Hunter, DOS on the PC) and request a directory listing.

Measurement files may in theory be retained indefinitely, but must eventually be deleted due to obsolescence or lack of file space. To erase a disk file, including measurement format and all data records, select "Erase Disk File". Enter the file name (without the .GDC extension) and confirm deletion.

### 2.3.2 Clear Data/ Keep Format

To clear only the data records while retaining the measurement format, select "Clear Data/ Keep Format" from the System Control/ Clear menu (M2). Enter the file name and confirm deletion.

### 2.3.3 Count Data Records

In order to load format measurements quickly when a file name is entered (for data entry, format modification, etc.), the format portion only is read; actual data records are not counted. Therefore, any discrepancy between the number of downloaded records and the total count on the tracking line will not be caught when the measurement format is loaded.

To determine whether a downloaded data file contains the number of records stated on the tracking line, select "Count Data Records" from the System Control/ Clear menu (M2) and enter the file name when prompted. The screen will display:

```
File contains x data records;
[T] total is y.
```

If the totals match, control returns to the menu. If the totals **do not** match, you will be prompted:

```
Adjust tracking line total?
```

To set the tracking line total to the actual count and avoid subsequent errors, respond Y. The tracking line will be adjusted on file.

It is a good practice to count data records in downloaded files before their first data access under GDC.

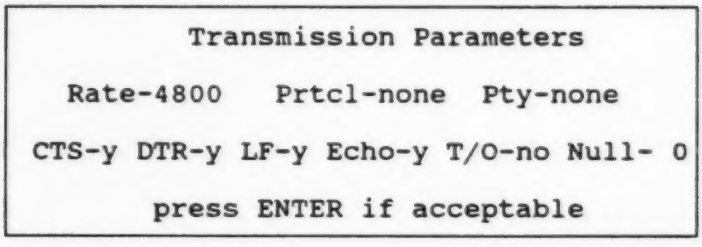
### 2.3.4 Set Communications Parameters - Hunter only

The PC version of GDC does not include communications facilities. GDC for the Hunter allows the communications parameters to be set for a device associated with 'R' type fields, to allow data input via the RS232 port. All other communications, such as up and down loading of files must be performed from DEMOS. Refer to the Hunter Operations Manual and Huntcom documentation for details.

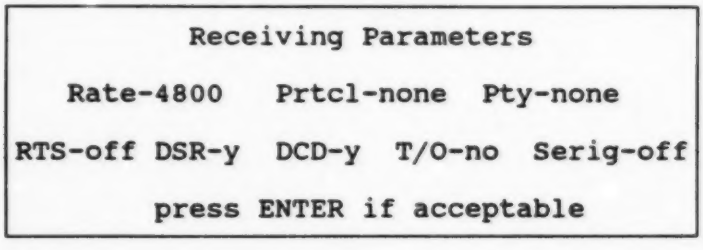
To set the communications parameters for data input via the RS232 port, select the "Set Communications Parameters" option from the System Control/ Clear menu (M2).

Use the up and down arrows to scroll/select parameter values, and the left and right arrows to move between parameters. Press the Enter key to accept a screen of parameters as displayed.

The first screen contains transmission parameters. Change the parameters if necessary, then press Enter.




The second screen contains reception parameters. Change the parameters to suit your input device, then press Enter.



## 2.4 **Available Disk Space - Hunter only**

To determine how much disk space is available for file storage on the Hunter select "Available Disk Space" from the main menu. The system will take a few moments to calculate the remaining disk space, then will display the result in kilobytes (K):

Available disk space = x K

where "x" is the number of kilobytes available.

Select this option before adding to existing files or defining new files. If insufficient space is available, transfer and delete some existing files.

## 2.5 Measurement Format

To access measurement formats, select "Measurement Format" from the main menu, and respond to the file name prompt. The Measurement Format menu (M3) will display:

```
 1 - ENTER NEW Measurement Format
 2 - MODIFY Measurement Format
 3 - REVIEW Measurement Format
 4 - Add/Change/Review REMARKS

Enter function number: _              M3
```

Measurement formats and remarks can be created, altered and reviewed under the functions provided by this menu.

Alternately, a measurement format can be created on a PC (under GDC or a text editor) and transferred to the Hunter, along with data records. Data may then be added, reviewed or modified on the Hunter.

### 2.5.1 Define Measurement Format

Before data collection can begin a measurement format must be defined. The format provides detailed information about how the data is stored and what data may be stored. The format may be downloaded (with or without data) from a PC to the Hunter, or may be defined on a PC or Hunter under the "Enter New Measurement Format" option from the Measurement Format menu (M3).

Each data item to be collected under GDC is called a data field. Many fields compose a data record; each data record contains values for the same data fields. For example, the fields could be height and diameter, and the data record could be one tree. Measurement format definition proceeds one field at a time, using two screens for each field.

The first field definition screen is:

```
NEW MEASUREMENT FORMAT: FIELD #x
    Update/Rs232 (U/R): _
    Prompt            :
    Record Start Posn : m
    Screen Start Posn : n
    Length            : 1
    Numeric/Text (N/T): _
BRK/ESC: exit
```

Update/Rs232 - defines the field type. GDC supports several types of data field. Update and RS232 fields are valid for new formats; additional types are valid in downloaded files. For data entered via the keyboard enter **U**; for values from the serial port (height pole, caliper, etc.) enter **R**. On the PC, both update and RS232 types will be input via the keyboard.

**Note: Press the Break key to terminate field definition.**

Prompt - defines the column header for the data field, and should briefly describe the data item (e.g. HT, DIAM). The prompt may be up to eight characters long; on the spreadsheet, the prompt will be truncated to the defined length of the field.

Record Start Posn and Screen Start Posn - are calculated automatically. The "record start position" is the actual starting position of the field within the data record; fields are concatenated without intervening blanks. The first field starts at position 1.

The "screen start position" is the starting location of the field on the spreadsheet data screen. Data fields on the screen are separated by one blank. The first field starts at position 7 on the spreadsheet display because it is preceded by the record # display.

The actual data record length is limited by the number of fields that can be displayed on a 80 character wide spreadsheet. The greater the number of defined fields, the shorter the permissible record length, because of the intervening blanks contained on the screen display.

Length - is the maximum number of characters the field may contain. If fewer characters than the defined length are entered for a numeric field the value will be right- justified and front-padded with blanks; if fewer characters than the defined length are entered for a text field the value will be left-justified and rear-padded with blanks. Fields must be at least one character long.

Numeric/Text - specifies whether the field will contain numbers (integer or fixed point) or text (any printable character). Type N to define a numeric field, or T for a text field.

Enter field type, prompt, length and numeric/text value. After all information for this screen has been entered you will be prompted "All correct?". Type Y if the screen is correct; else type N and correct any errors.

The second field definition screen will appear:

```
NEW MEASUREMENT FORMAT: FIELD #x
    Message                 :
    Auto Duplicate (Y/N): N
    Auto Increment (Y/N): N
    Identifier
       0=no/ 1,2,3=order: 0
```

Message - is a 25 character message which will appear at the bottom of the screen when the cursor is in the related data column. It can be used to elaborate on the short prompt. For example, if the column prompt is "VIG" for vigour, the message could be "0=DEAD 1=POOR 2=MOD 3=GOOD".

Auto Duplicate - allows definition of automatically duplicating data fields; the field may be numeric or text. Duplication will occur when the cursor is advanced to a new added record. Duplicated entries may be overwritten. For example, tree species may be defined as automatically duplicating, in which case the species need only be typed when a different species is encountered.

Auto Increment - allows definition of automatically incrementing fields; automatic incrementing fields must contain integer numbers. Incrementation will occur when the cursor is advanced to a new added record. Incremented entries may be overwritten. For example, tree numbers may be defined as automatically incrementing, in which case the tree number need only be typed when a discontinuity is encountered.

Identifier - allows up to 3 data fields to be designated as record identifiers for data record searches.
Enter 0 if all record accesses will use record number.
Enter 1, 2, or 3 to define a field as the primary, secondary or tertiary identifier if record accesses by identifier **may be** performed. Searches by record number will still be possible, even if identifiers are specified.

For example: A data set containing tree species, age class, height, diameter and condition can be searched by age class within species if species is defined as the primary identifier (identifier=1) and age class as the secondary identifier (identifier=2).

Enter message, duplication, incrementation and identifier responses. After all information for this screen has been entered you will be prompted "All correct?". Type Y if the screen is correct; else type N and correct any errors.

When the first field definition screen appears again, proceed with the next field, or press the Break key to terminate field definition. The format summary screen will display.

For example:

| | |
|---|---|
| File name: | SAMPLE |
| Record Length: | 52 |
| Number of fields: | 9 |

View the information, then press any key to save the file and return to the menu. The new format is complete. You may review the format, make minor modifications, or start data entry.

### 2.5.2 Modify Measurement Format

After a measurement format has been created (or downloaded) limited modifications are permitted. The record length and field lengths may not be altered, because these changes would restructure the entire data file.

To alter a measurement format select the "Modify Measurement Format" option from the Measurement Format menu (M3).

Note: After the option is selected, the measurement format will be automatically loaded. If any errors are detected during the load the user will be advised. The errors must be corrected before processing can continue.

The first field screen will contain previously defined values. For example:

```
NEW MEASUREMENT FORMAT: FIELD #1
     Update/Rs232 (U/R): U
     Prompt            : SP
     Record Start Posn : 1
     Screen Start Posn : 7
     Length            : 2
     Numeric/Text (N/T): T
BRK/ESC: exit  UP:previous  DN:next
```

To terminate modifications, press Enter. To access the previous field, press the UP arrow. To access the next field, press the DOWN arrow.

Modifications may be made to the following entries:

- Update/Rs232 field type
- Prompt (column header)

The second field definition screen will appear. For example:

```
NEW MEASUREMENT FORMAT: FIELD #1
     Message             :  PL=lodgepole PW=white
     Auto Duplicate (Y/N): Y
     Auto Increment (Y/N): N
     Identifier
        0=no/ 1,2,3=order: 1
```

Modifications may be made to the following entries:

- Message
- Auto Duplicate
- Auto Increment
- Identifier

After the last field, control will return to the menu.

### 2.5.3 Review Measurement Format

To review a measurement format select the "Review Measurement Format" option from the Measurement Format menu (M3).

The first screen will display the file name, record length and number of fields. Press any key to continue.

The next screens will list the field definition lines, as many as 6 per screen. View each screen as long as desired, then press any key to proceed. An example of a field definition is:

```
[F]U /SP      / 1/ 2/TYN1/PL=LODGEPOLE PW=WHITE
```

The characteristics of this field are:

| | |
|---|---|
| U | - update field |
| SP | - column prompt (species) for spreadsheet |
| 1 | - record starting position |
| 2 | - field length |
| T | - text data |
| Y | - auto duplicating |
| N | - not auto incrementing |
| 1 | - primary identifier (identifier #1) |
| PL=.. | - descriptive message line |

For an exhaustive explanation of field format lines, refer to the "File Descriptions" section.

### 2.5.4 Add/ Change/ Review Remarks

A measurement file may contain up to 15 lines of description called remarks. These remarks may be downloaded in a transferred file, and may be created, modified or viewed under GDC control.

To add, change or review remarks select "Add/ Change/ Review Remarks" from the Measurement Format menu (M3). The Remarks menu (M5) will appear:

```
1 - ADD Remark
2 - CHANGE Remark
3 - REVIEW Remark

Enter function number: _          M5
```

Remarks are accessed on a line by line basis. The maximum remark length is 75 characters.

To add a remark, select the "Add" option. The screen will prompt:

```
Add remark # n:
 _
```

Key and enter the new remark.

To change a remark, select the "Change" option. The screen will read:

```
Change remark ... line #:
```

Enter the number corresponding to the desired remark. (If the number is unknown, review the remarks before proceeding.) The screen will display the current remark and prompt for modifications:

```
Change remark ... line #: n

Old remark:
  ... old remark displays ...
New remark:
 _
```

To retain the current remark without change, just press Enter. To change the remark, key the new remark, then press Enter.

To review remarks, select the "Review" option. The remarks will display, seven lines per screen, each preceded by its remark number.

For example:

```
1: THIS IS THE FIRST REMARK
```

## 2.6 Exit to the Operating System

To exit to the Operating System (DOS or DEMOS), press the Break key (ESC on the PC; BRK on the Hunter) on the main menu (M1). If password check is active, you will be prompted for the valid password. If password check is inactive, you will be prompted "Really exit?". Respond to the prompt.

When you exit GDC in this manner all data files will be preserved, even if you failed to start GDC on the Hunter with the "cont" command.
On exiting GDC, the password and any minimum/ maximum data field values will be lost.

Warning: If you start GDC on the Hunter without the "cont" command then turn the Hunter off during GDC processing, the current data file will probably be corrupted.

## 2.7 Error Messages

### 2.7.1 Program Related Errors

** file not found/ file error **
the file does not exist on the disk or is corrupted

** field must be numeric **
auto increment fields and min/max value fields must be numeric

** field must be updatable **
when changing the min/max allowed for a field, the field must be an updatable type i.e. Update or Rs232, not Display or Compare

** max must be >= "min" **
when changing the maximum value allowed for a field, the maximum must be >= "min".

** >="min" and <="max" **
when entering a numeric data value, the value must be >="min" and <="max".

** all remark lines full **
all remark lines have been used

** remark line # out of range **
the remark line number given does not exit

** entry should be >= compare value
when updating an "update with compare" field, the value entered should be >= the comparison value. Values < the compare value will be accepted as correct after one warning.

** Spreadsheet width is full **
** No more fields may be defined **
due to limitations in spreadsheet width (80 characters), no more data fields can be defined

** record #"n" out of range **
record "n" is invalid: for data review by record number, the record must exist in the file; for data entry/edit by record number, the record must exist in the file or may be one larger than the total count in order to start adding records

** must be >=1 and <="number of fields"
when changing the maximum /minimum value allowed for a field, a valid field number must be given

** display screen full **
maximum spreadsheet width (80 characters) has been exceeded; shorten current field

** file already exists - overwrite? **
file name given for a new measurement file already exists. Reply Y to overwrite the file; reply N to enter a different file name.

** no matching record found **
no data record matching the identifier(s) given exists beyond the previous file position

** no data has been entered **
data access was attempted for a file containing format information only

** floating pt values not incremented **
automatic incrementation is not performed on fixed point numeric values

** RS232 port: no access/ response **
attempt to input data from RS232 port failed

** no 1st identifier defined **
search by identifiers is invalid if no identifiers defined

** no 2nd identifier defined **
search by 2 or more identifiers is invalid if no 2nd identifier defined

** no 3rd identifier defined **
search by 3 identifiers is invalid if no 3rd identifier defined

** record # must be >=1 and <="max record #"
for review or edit access by record number, the maximum record number is the total number of records. For data entry access by record number, the maximum record number is the total number of records plus one.

** unexpected measurement file error **
an unexpected error has occurred. Please make careful note of the processing conditions and the current data values when the error occurred, and advise your software systems contact.

### 2.7.2 Data File Format Related Messages

The following messages may be generated during definition or loading of a measurement format. The errors may be in the record format line, field format lines, the tracking line, remark lines, or in data records which are at odds with the format information. Each message has an associated error code for easy lookup.

100: no [F] lines at beginning
- no format lines at the beginning of the file

101: only 1 [F] line found
- only one format line found
- at least one record format line and one field format line are required

102: more than 20 field format lines
- system maximum is 20 data fields

103: 1st [F] line too short
- record format line must be at least 18 characters long to hold all required information

104: 1st [F] line; bad structure
- record format line has slash (/) in wrong place

105: 1st [F] line; bad record length
- record length must be < 75 - (# of defined fields)

106: # fields doesn't match 1st [F] line
- # of field definitions must match total fields from record format line

107: [F] line must be 25 or 51 chars
- field format line without message must be 25 characters long; field format line with message must be padded to 51 characters

108: [F] line - bad structure
- field format line has slash (/) in wrong place

109: [F] bad spec (not D,U,UC,C,R)
- invalid field type; must be D, U, UC, C, or R

110: [F] C field must follow UC field
- compare field must come immediately after the associated update-with-compare field

111:[F] bad length;must be >=1 & <=73
- minimum field length is 1; maximum field length is 73

112:[F] bad start; must be >=1 & <reclen
- field starting position in record must be >= 1 and <= the record length

113:[F] bad length;must be >=1, <=reclen
- field length must be >=1 and <= record length

114:[F] start + length > record length
- field starting position + length exceeds record length

115:[F] bad data type (not T or N)
- field data type must be (T)ext or (N)umeric

116:[T] line not found after last [F]
- no tracking line found after last field format line

117:[T] line must be '[T]xxxxx/xxxxx'
- tracking line is wrong length; must be 14 characters as shown

118:[T] line must be '[T]xxxxx/xxxxx'
- tracking line wrong format; slash in wrong location

119:[T] # updated records must be >=0
- tracking line error

120:[T] total count <= updated count
- tracking line error

121:[T] no data found as in track line
- tracking line total record count is >0, but there are no data records in file

122: wrong length data line
- data line length not equal to record length from record format line

124: too few data records in file
- end of data reached before total number of records from tracking line were read

128: too many comments in file
- maximum of 15 remark lines ([C]) permitted

129: [F] either duplicate or increment
- auto duplicate and auto increment are mutually exclusive attributes

130: [F] identifier must be 0,1,2,3
- field identifier value must be >=0 and <=3

131: [F] can only increment numbers
- auto increment field must be numeric

132: [F] UC/C fields must be numeric
- update-with-compare and compare fields must be numeric

133: [F] numbers must be <=9 digits
- numeric fields cannot exceed 9 digits

134: [F] identifiers must be <=10 chars
- identifier fields cannot exceed 10 characters

135: [F] identifier # must be unique
- 1st, 2nd and 3rd level identifiers must be unique fields

136:[F] UC/C flds must be same type/len
- update-with-compare and compare fields must have same length and both be numeric

137:[F] data display >= 80 chars long
- display screen cannot exceed 80 characters including record # display

138:[F] maximum record count = 32700
- maximum number of records per file is 32700

139:[F] maximum incremented value =32700
- maximum value for auto increment field is 32700

# 3 COMMUNICATIONS/ SYSTEM MANAGEMENT

All data transfers to and from the Hunter will be performed under DEMOS control. Communications parameters for some commonly used communications software are included here for convenience. Refer to the Hunter Operations Manual and documentation for your communications software for more information.

## 3.1 HUNTCOM Communication Settings - Hunter only

Hunter settings:

Transmission Parameters

Rate-4800 Prtcl-none Pty-8bit

CTS-y DTR-n LF-y Echo-y T/O-no Null- 0

press ENTER if acceptable

Receiving Parameters

Rate-4800 Prtcl-none Pty-8bit

RTS-hold DSR-n DCD-n T/O-no Serig-off

press ENTER if acceptable

Microcomputer (PC) settings:

| | |
|---|---|
| Rate: | 4800 |
| Parity: | None |
| Word Length: | 8 |
| Stop Bits: | 1 |
| Protocol: | None |

### 3.2 **Standard Communication Package Settings** - Hunter only

**Standard communication packages use a minimal number of lines for communicating, typically lines 1,2,3 and 7. "Procomm" is one such communications package.**

**Hunter settings:**

**Transmission Parameters**

**Rate-4800 Prtcl-Xon/off Pty-8bit**

**CTS-y DTR-n LF-y Echo-n T/O-no Null- 0**

**press ENTER if acceptable**

**Receiving Parameters**

**Rate-4800 Prtcl-Xon/off Pty-8bit**

**RTS-hold DSR-n DCD-n T/O-no Serig-off**

**press ENTER if acceptable**

Microcomputer (PC) settings:

| | |
|---|---|
| **Rate:** | **4800** |
| **Parity:** | **None** |
| **Word Length:** | **8** |
| **Stop Bits:** | **1** |
| **Protocol:** | **Xon/Xoff** |

## 3.3 Implement GDC

### 3.3.1 Implement GDC on the PC

To implement GDC on the PC, copy the two files GDC.EXE and GDCERR.MSG from the master PC version diskette to a working diskette or hard disk. Start GDC be entering "GDC" from DOS; exit GDC but pressing the Break key (ESC) from the main menu.

### 3.3.2 Outline of Steps to Implement GDC on the Hunter

This is a brief outline of the steps required to implement GDC on the Hunter via a PC. Section 3.3.3 contains specific instructions for implementation from PC compatibles.

1. Set matching communications parameters on the Hunter and PC.
2. Connect the appropriate RS232 communications cable (null modem cable, Huntcom cable, etc.)
3. Enter DEMOS on the Hunter, communications software on the PC.
4. Initialise communications.
5. Use the INP command twice on the Hunter, once to transfer GDC.COM and once to transfer GDCERR.MSG.
6. Exit communications; uncable machines.
7. From DEMOS on the Hunter, enter "cont gdc".

### 3.3.3 Implement from PC Compatibles - Hunter only

GDC is written in 'C' language, compiled under the Aztec C Cross Compiler, version 1.06D (host: PC-DOS; target: CPM), owned and distributed by Manx Software Systems Inc., Shrewsbury, New Jersey.

GDC may be implemented from a PC Compatible using either the standard communications package, Huntcom, or the Batch Transfer system, HTX. Huntcom transfers software files one at a time, requiring user interaction for each file. HTX transfers all files on the file transfer list in sequence, requiring only one user interaction for the entire implementation process. Both methods will be described.

**Note:**

1. The Huntcom communications program is a product of Husky Computers Ltd., England. The HTX batch transfer communications package is a product of Resource Data Management (1985) Inc., Canada. Both products may be purchased through the author.

2. HTX communications package may only be used to transfer executable files from the default drive of a PC to the file manager level (DEMOS) of a Hunter. Do not attempt to implement software written in Hunter Basic using HTX.

3.3.3.1 Implement with Huntcom

1. HUNTER: Press the **PWR** key to activate the machine, then press any key to pass the title screen.

2. HUNTER: is now at the file manager level, DEMOS, which employs the prompt character ">" in column one. To set the communications parameters for communicating with the PC, select **CTL 4** for "Coms" from the file manager screen. Set the communications parameters as shown in section 3.1. (Refer to the Hunter Operations Manual, Communications Section, for additional assistance.) Press Enter to return to DEMOS.

3. PC: Activate the machine under DOS. Start Huntcom from the default drive.

4. Connect the cable to both machines. On the PC, select communications parameters as outlined in section 3.1.

Continue as follows to implement both of the files on the distribution diskette, GDC.COM and GDCERR.MSG. The files will be referenced as "filename" in the discussion.

1. HUNTER: (still in DEMOS) press **CTL 6** to select "term" (terminal mode), then press **CTL 8** to return to "syst" (system file manager), to initialise communications.

2. HUNTER: Enter: **inp 999** "filename"
to start transfer of the software (e.g. **inp 999 gdc.com**). The Hunter will display "waiting" until transmission from the PC begins, when it will display "waiting" and "loading" alternately.

3. PC: Select transmission option and give file name, including drive designation if necessary. Transmission may take several minutes.

4. HUNTER: when file transfer is complete, terminate communications by holding the **shift** key and pressing **ESC/BRK**. The DEMOS prompt will display.
Repeat the **entire** transmission process (steps 1-4 above) for the second file on the distribution diskette.

5. PC: return to DOS; disconnect the cable.

6. HUNTER: start "continuous" execution of GDC by entering:
**cont gdc**
The title screen will appear; read it, then press any key to access the main menu. Unless you plan to use the system now, reset the password and turn off the machine. The main menu will appear next time the machine is powered on.

### 3.3.3.2 Implement with HTX

HTX uses a file transfer list (FILETX) on the PC to determine which files to transfer. HTX and FILETX must reside in the same directory.

Create the FILETX file, containing four lines of information into the file as illustrated. Press Enter where the illustration shows <>. Other than the carriage return/ line feed created by pressing Enter there are no blanks or unprintable characters in the file. (The last two lines each contain only carriage return/ line feed.)

```
gdc.com<>
gdcerr.msg<>
<>
<>
```

Continue as follows:

1. PC: Copy the GDC files from the software diskette to the directory/drive containing HTX and assign it as the default.

2. PC: Enter **HTX**, the select the Transfer Files option.

3. HUNTER: Following instructions on the PC screen:
   - Turn the Hunter off, then on.
   - Press CNTL-4 (Coms) to change communications parameters.
   - Set the communications parameters as shown on PC screen.
   - Enter CRT (i.e. type CRT and press **enter**).

Connect the cable to both computers. Press any key on the PC. The PC screen will pause momentarily, then will display the file name and record counts for the current transfer.

Monitor the PC screen occasionally so that the Hunter does not accidentally power-down while connected to the PC. When the PC indicates the transfer process is complete (e.g. displays "Disconnect Hunter ..."), disconnect the cable. Turn the Hunter off then turn it on again.

Start "continuous" execution of GDC on the Hunter. Enter

```
cont gdc
```

The title screen will appear; read it, then press any key to access the main menu. Unless you plan to use the system right away, reset the password and turn off the machine. The main menu will appear next time the machine is powered on.

### 3.3.3.3 Implement with Kermit & Procomm

1. HUNTER: Press the **PWR** key to activate the machine, then press any key to pass the title screen.

2. HUNTER: is now at the file manager level, DEMOS, which employs the prompt character ">" in column one. To set the communications parameters for communicating with the PC, select **CTL 4** for "Coms" from the file manager screen. Set the communications parameters as shown in section 3.2. (Refer to the Hunter Operations Manual, Communications Section, for additional assistance.) Press Enter to return to DEMOS.

3. PC: Activate the machine under DOS.

4. Connect the cable to both machines. On the PC, select communications parameters as outlined in section 3.2.

Continue as follows to load the file HKERMIT.COM from the distribution diskette onto the Husky.

5. HUNTER: (still in DEMOS) press **CTL 6** to select "term" (terminal mode), then press **CTL 8** to return to "syst" (system file manager), to initialise communications.

6. HUNTER: Enter: **inp 999** HKERMIT.COM to start transfer of the software. The Hunter will display "waiting" until transmission from the PC begins, when it will display "waiting" and "loading" alternately.

7. PC: Start the SEND program. When prompted for a filename, type HKERMIT.COM (include drive designation if necessary). Transmission may take several minutes.

8. HUNTER: when file transfer is complete, terminate communications by holding the **shift** key and pressing **ESC/BRK**. The DEMOS prompt will display.

9. PC: return to DOS and start the PROCOMM program.

10. HUNTER: start the kermit program by typing HKERMIT
At the kermit prompt, type RECEIVE

11. PC: once the Hunter's kermit program is set up to receive, hit the PgUp key on the PC (to upload to the Husky) and select option 2 for kermit. At the filename prompt, type GDC*.* This will send the files GDC.COM and GDCERR.MSG to the disk of the Hunter. Kermit, unlike HUNTCOM, will allow you to send multiple files at once using the standard filename wildcard characters.

12. PC: when the file transfer has been completed, type Alt-X to return to DOS.

13. Repeat steps 10 & 11 as necessary to transfer data files to the Hunter by substituting the appropriate file names.

14. HUNTER: at the kermit prompt, type EXIT to return to DEMOS.

15. PLEASE NOTE: now that GDC.COM, GDCERR.MSG and HKERMIT.COM have been loaded onto the Husky, you need not follow steps 6,7 & 8. Step 11 need only be adapted to send data files (of the form *.GDC) to the Hunter.

16. HUNTER: start "continuous" execution of GDC by entering:

**cont gdc**

The title screen will appear; read it, then press any key to access the main menu. Unless you plan to use the system now, reset the password and turn off the machine. The main menu will appear next time the machine is powered on.

NB: Kermit may be used again to **download** the finished data files form the Hunter to the PC. Simply modify the above procedure by keying up the PC PROCOMM program first -- you must hit the PgDn key and again select option 2 for Kermit. Once the PC is ready to receive, at the kermit prompt on the Hunter, type SEND *.GDC
The PC will receive all files matching this pattern and write them to the default disk drive.

### 3.4 **Exit/ Restart GDC**

To exit GDC, press the Break key (BRK on Hunter; ESC on PC) from the main menu, then respond to the password or "Really exit?" prompt.

HUNTER: After exiting GDC, the Hunter may be either under control of DEMOS or the Basic interpreter:

- if the screen displays ">", DEMOS is in control.

- if the screen displays "READY", the Basic interpreter is in control. Enter the word **system** to access DEMOS.

To restart continuous execution of GDC, enter: **cont gdc**
from DEMOS.

### 3.5 Remove GDC from the Hunter

**NOTE: GDC SHOULD NOT BE REMOVED UNTIL ALL DATA FILES HAVE BEEN TRANSMITTED AND VERIFIED ON THE HOST PC.**

To remove GDC from the Hunter, exit to DEMOS. Then, erase both software files GDC.COM and GDCERR.MSG as shown:

**era filename** (press Enter)

Confirm **y** when prompted.

# 4 FILE DESCRIPTIONS

## 4.1 GDC Download File (Data Set)

GDC Download Files are measurement files sent from the PC to the Hunter for further processing. A download file contains a predefined measurement format, a data tracking line describing the status of the data and the number of data records in the file, an optional set of remarks, and optional display and comparison values in each record.

## 4.2 Measurement Format

The measurement format always comes first in the download file. It must follow precisely the design shown. Lines beginning with "[F]" contain format information. The first format line contains the record format, describing the number of fields and the total record length for the file; subsequent format lines contain field formats, each describing an individual data field.

Record Format Line: one per file

| Description | Type / Contents | Length | Locn |
|---|---|---|---|
| record code | [F] | 3 | 1- 3 |
| data record length | numeric | 3 | 4- 6 |
| | / | | 7- 7 |
| number of fields | numeric | 2 | 8- 9 |
| | / | | 10-10 |
| file name | alphanum | 8 | 11-18 |

Field Format Lines: one per field

| Description | Type / Contents | Length | Locn |
|---|---|---|---|
| record code | [F] | 3 | 1- 3 |
| field type | U /R /D / | 2 | 4- 5 |
| (see note below) | UC/C / | | |
| | / | | 6- 6 |
| column header prompt | alphanum | 8 | 7-14 |
| | / | | 15-15 |
| record start position | numeric | 2 | 16-17 |
| | / | | 18-18 |
| field length | numeric | 2 | 19-20 |
| | / | | 21-21 |
| data type | N(umeric)/ | | |
| | T(ext) | 1 | 22-22 |
| auto duplicate | Y/N | 1 | 23-23 |
| auto increment | Y/N | 1 | 24-24 |
| identifier code | 0-3 | 1 | 25-25 |
| optional: | | | |
| message delimiter | / | | 26-26 |
| message | alphanum | 25 | 27-51 |

* Note:

1. Field types:
   D - Display; display only for existing records; data values may be input if new added record
   U - Update from keyboard
   UC- Update from keyboard with compare to immediately following field
   C - Comparison value for immediately preceding field
   R - update from Rs232 port (Hunter only)

2. Field format lines may be either 25 or 51 characters long, because the message is optional. If a message is defined, it just be right-padded to 25 characters in length.

## 4.3 Tracking Line

The tracking line contains the status of the data set. The tracking line must follow immediately after the last field format line. The last accessible record in the data file will have the record number given as the total record count on the tracking line.

Tracking Line: one per file

| Description | Type / Contents | Length | Locn |
|---|---|---|---|
| record code | [T] | 3 | 1- 3 |
| # updated data records | numeric | 5 | 4- 8 |
| | / | | 9- 9 |
| total # data records | numeric | 5 | 10-14 |

## 4.4 Remarks

Remark lines can be used to describe the data set, the data collection site, collection dates, or any other pertinent information. The remark lines begin with "[C]" and immediately follow the tracking line. There may be from 0 to 15 remark lines, each padded to a total length of 78 characters (i.e. [C] plus 75 characters of comment).

Under GDC, remarks are "added" by overwriting existing blank remarks. To allow for the maximum number of remarks, put all current remarks into the download file, then add blank remarks up to the limit of 15 remarks in all.

## 4.5 Download Display and Compare Data

Download data records must look like records created by GDC, except that Display (D), Update with Compare (UC) and Compare (C) fields are permitted in download files.

Display fields may be defined in any position in the record. Data values in display fields cannot be edited; display fields may have new values entered on new "added" records. Display fields appear along with other fields in the body of the data spreadsheet.

Update with Compare and Compare fields must always be paired, the Update with Compare being defined before and adjacent to the Compare field. The two fields must both be numeric and have the same field length. The comparison check triggers a warning if the new value in the UC field is less than the comparison value. These fields are frequently used to monitor previous and current measurements. A download file for UC/C field use must contain the appropriate number of blanks, dots (.) or underscores (_) in the data records where the update data will be placed. This reserves room in the data record for the new values.
Note: Underscores or dots will be easier to see on the spreadsheet screen than blanks.

WARNING: GDC is not very forgiving when downloading historic data - the structure of the download file must match exactly the structure that would be produced by GDC itself, including fixed locations of slashes, trailing blanks, etc. The only exception to this rule is in the case of a discrepancy between the actual number of data records downloaded and the record count on the tracking line; you can use the "Count Data Records" function in GDC to determine the actual number of records in the file and adjust the tracking line.

For assistance in creating a download file, refer to the "Data Download Tutorial" section.

## 4.6 Example of Download File (Data Set)

(The *'s and description are not part of the file.)

```
[F] 17/ 5/SAMPLE
[F]D /PL#      / 1/ 3/TYN1     /* plot# created as Text, auto dupe
[F]D /SP       / 4/ 2/TYN2     /* species
[F]U /CODE     / 6/ 4/TNN3     /* 4 bytes for condition code
[F]UC/N_HT     /10/ 4/NNN0     /* room for new height
[F]C /O_HT     /14/ 4/NNN0     /* value for old height
[T]    0/    6
[C]THIS IS THE ONLY REMARK LINE
111HW..... 125
111HW..... 146
111HW..... 201
111HW..... 181
112HW..... 139
112HW..... 194
```

Notes:

1. no field messages are defined
2. the remark line is padded to 78 characters
3. the dots in the data records reserve 8 spaces for the condition (4) and the new height (4).
4. for searches by identifier the order will be:
   plot#, species, code

If a download file needs to be created from values currently stored on paper, it may be easier to use the PC version of GDC to create the data set than to enter the values using a test editor. Under GDC, create dummy fields for the future update fields, then edit the field descriptions using the text editor after the complete file has been created.

The spreadsheet screen for the sample data set is:

| REC# | PL# | SP | CODE | N_HT | O_HT |
|---|---|---|---|---|---|
| 1 | 111 | HW | .... | .... | 125 |
| 2 | 111 | HW | .... | .... | 146 |
| 3 | 111 | HW | .... | .... | 201 |
| 4 | 111 | HW | .... | .... | 181 |
| 5 | 112 | HW | .... | .... | 139 |
| 6 | 112 | HW | .... | .... | 194 |

## 5 PROGRAM LIMITATIONS

The following program limitations apply to version 6.0 of GDC. Some limitations are inherent in the design of the program, others can be changed by recompiling the source code. Although recompiling and redistributing the source code is not trivial, it can be done. Therefore, the compiled options are marked with an asterisk; they may be possible to change if you have a strong enough case.

1. maximum record length is 75 minus the number of data fields, because the spreadsheet screen has the format:
   recno fld1 fld2 ...
   with the record number occupying 5 characters.

*2. maximum number of fields per record = 20

*3. maximum number of remark lines per file = 15

4. the format of all [F], [C] and [T] records is fixed. Refer to the "File Description" section.

5. maximum length for auto increment numbers (which are integers) is 5 digits, with a maximum value of 32700.

6. maximum length for numeric fields is 9 digits; the maximum integer value which may be assigned is 32700.

7. maximum record number is 32700; i.e. maximum size file contains 32700 data records.

8. the maximum length identifier field is 10 characters.

# 6 APPENDIX

## 6.1 Data Download Tutorial

Create and use the sample file illustrated, then create, modify and use a more complex data format.

1. Create this "first-time measurement" under GDC, named FIRST:

```
field 1:  plot reference #
          prompt: PLOT              start:  1
          length: 4                 T/N:    T (text)
          auto dupe: Y

field 2:  location
          prompt: LO                start:  5
          length: 2                 T/N:    N (text)
          auto incr: Y

field 3:  current height
          prompt: HT_1              start:  7
          length: 4                 T/N:    N (numeric)
```

2. Enter at least 5 data records for the measurement.

```
PLOT:      0011 for all records
               (this is where the auto dupe comes in)      LO:
 11 through 15
               (overwrite first display with 11, then rely
                    on the auto increment)
HT_1:      100, 101, 200, 150, 160
```

3. Send the format and data to the PC. Study the file, making sure you understand the composition of the format before proceeding.

4. On the PC, make a copy of the entire file, called SECOND.GDC. Edit the format and data to a "second measurement" format as shown:

Measurement format changes:

Record format changes: change total length to 14 bytes, in 4 fields: [F] 14/ 4/SECOND

Field format line changes:

PLOT: change to a display field
[F]D /PLOT ...

LO: change to a display field

HT_2: insert a second year height field after the location, for UC with the old height field:
[F]UC/HT_2 / 7/ 4/NNN0
or
[F]UC/HT_2 / 7/ 4/NNN0/...25 char message

HT_1: gets bumped down behind the new height field, and is changed to a Compare field:
[F]C /HT_1 /11/ 4/NNN0 ...

Data Changes:
Insert 4 dots (.), underscores (_) or blanks in each data record at position 7, to allow for the new height measurement.

5. Send edited format and data to the Hunter. Perform a "second measurement" on the data using the Enter/Modify Data option. Try entering a new height which is smaller than the previous value; you should trigger a warning message. Try creating new records; you will be able to record information in display fields on the added records.

## 6.2 Current Release Changes - Version 6.0

March 1989 - May 1989:

GDC completely rewritten in the 'C' language, and compiled under the Aztec C PC/MS DOS Compiler (PC version), and the Aztec C Cross Compiler (version 1.06D, host: PC-DOS; target: CPM) (Hunter version), owned and distributed by Manx Software Systems Inc., Shrewsbury, New Jersey.

Major changes:

Format:
- additional field attributes: 25 character field description, auto duplicate, auto increment, search by identifiers

Data
- data collected in spreadsheet format
- data entry/ update performed in single process, transparent to user

General:
- systems available for PC Compatibles and the Hunter

## 6.3 GDCC - PC File Format Checking Program

Included in the distribution software is another program, GDCC.EXE, to be used only on MS-Dos microcomputers (PC's and compatibles). Use this program to verify and repair the format and contents of your download files **before** sending them to the Husky:

1) Verifies the validity of the format definition.
2) Corrects minor errors (warnings) in format definition.
3) Corrects minor problems with length of data records.
4) Converts version 5 data files to version 6.

### 1 - Format Verification

This part of the program analyses your data file and flags any anomalies found. There are two levels of errors. The most serious defects are reported as **errors**. These items are generally ones which the automatic correction facility cannot cope with. The second type of message is a **warning**. Most items of this type can be at least partially repaired by the automatic correction facility. Generally speaking, if GDCC reports your file as being acceptable to GDC 6 standards then it will be successfully usable by the Husky program.

### 2,3 - Minor Error (warnings) Correction

As previously mentioned, this program (using the -f option) will perform some minor repairs to invalid format definition statements. This feature is very basic and mostly involves padding or truncating lines to the correct lengths. Where padding occurs, the pad character is the question mark: '?'. Other corrections applied are:

- Tracking line added if not already present.
- Tracking line corrected to reflect actual # of records.
- Lead format line correction.
- Data lines too short are padded with '?' to defined width.
- Data lines too long are chopped to the defined width.

This feature is very skeletal. You will probably have to alter items manually afterwards in many cases.

## 5 - Version 5 to Version 6 Conversion

Last year's data files may be updated to the new format by specifying the -m option. This section of the program merely appends the default codes for the auto-duplicate, auto-increment and search-identifier fields: As you know, none of these features were available under GDC 5.

Examples:

1) To convert your version 5 data file, STRONG1.GDC, to version 6: Simply enter the DOS command:

```
GDCC -m STRONG1.GDC
```

2) OR, to convert this to version 6 and perform minor corrections:

```
GDCC -mf STRONG1.GDC
```

3) Option -z is a combination of options -fnrv. This will fix errors, number the lines (in displayed output only, not the data file itself), print all of the data records (with line numbers) and give a verbose reporting of the format definition for this file:

```
GDCC -z STRONG1.GDC
```

Unless otherwise defeated with the -b option, GDCC will create a backup file of the form STRONG1.GD~ on your working disk. This is done to **reduce** the chances of data loss during file manipulation: It is by no means a substitute for your own rigorous backup scheme.

I strongly reccomend that you experiment a few times with this program using **duplicate** copies of your download data files to familiarise yourself with it -- Please remember to make backup copies before hand ! It is hoped that this utility will ease the process of converting from the old file format to the new. Happy collecting !